CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/WNo.06/KRIDL/WMM/Gradation/2014-15

19.05.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, BBMP, Bangalore.

Name of Work : Improvements to roads and drains at Mariyannapalya Left Side in Ward No. 06, Dasarahalli Village Limits, BBMP, Bangalore.

Reference : EE/BTP/BBMP/KRIDL/WO/ /2013-14

Date of Testing : 19.05.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): 25985

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	1034	1034	4.0	96.0	95-100
22.4	6523	7557	29.1	70.9	60-80
11.2	5849	13406	51.6	48.4	40-60
4.75	4187	17593	67.7	32.3	25-40
2.36	3567	21160	81.4	18.6	15-30
0.600	2674	23834	91.7	8.3	8-22
0.075	1856	25690	98.9	1.1	0-8

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Note:

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Bangalore-560079.

ಸಹಾಯಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿಬಿಎಂಪಿ, ಬೆಂಗಳೂರು-24

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19.05.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, BBMP, Bangalore.

Name of Work : Improvements to roads and drains at Mariyannapalya Left Side in Ward No. 06, Dasarahalli Village Limits, BBMP, Bangalore.

Reference : EE/BTP/BBMP/KRIDL/WO/ /2013-14

Date of Testing : 19.05.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **26160**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	915	915	3.5	96.5	95-100
22.4	6512	7427	28.4	71.6	60-80
11.2	5697	13124	50.2	49.8	40-60
4.75	4415	17539	67.0	33.0	25-40
2.36	3625	21164	80.9	19.1	15-30
0.600	2586	23750	90.8	9.2	8-22
0.075	2115	25865	98.9	1.1	0-8

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GRADATION FOR WMM
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Name of Work : Improvements to roads and drains at Mariyannapalya Left Side in Ward No. 06, Dasarahalli Village Limits, BBMP, Bangalore.

Reference : EE/BTP/BBMP/KRIDL/WO/ /2013-14

Date of Testing : 19.05.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): 25720

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	954	954	3.7	96.3	95-100
22.4	6357	7311	28.4	71.6	60-80
11.2	5624	12935	50.3	49.7	40-60
4.75	4423	17358	67.5	32.5	25-40
2.36	3624	20982	81.6	18.4	15-30
0.600	2587	23569	91.6	8.4	8-22
0.075	1856	25425	98.9	1.1	0-8

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GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, BBMP, Bangalore.

Name of Work : Improvements to roads and drains at Mariyannapalya Left Side in Ward No. 06, Dasarahalli Village Limits, BBMP, Bangalore.

Reference : EE/BTP/BBMP/KRIDL/WO/ /2013-14

Date of Testing : 19.05.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): 25750

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	1008	1008	3.9	96.1	95-100
22.4	6235	7243	28.1	71.9	60-80
11.2	5587	12830	49.8	50.2	40-60
4.75	4169	16999	66.0	34.0	25-40
2.36	3584	20583	79.9	20.1	15-30
0.600	2815	23398	90.9	9.1	8-22
0.075	2057	25455	98.9	1.1	0-8

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19.05.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, BBMP, Bangalore.
Name of the Work	Improvements to roads and drains at Mariyannapalya Left Side in Ward No. 06, Dasarahalli Village Limits, BBMP, Bangalore.
Reference	EE/BTP/BBMP/KRIDL/WO/ /2013-14
Source / Location	WMM Plant
Type of Mix	Wet Mix Macadam
Date of Testing	19.05.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	383	385	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	78	81	83	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	305	304	304	
4	Aggregate Impact value = percent fines	20.37	21.04	21.45	
	100* (W_2/W_1)%				20.95

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, BBMP, Bangalore.
Name of the Work	Improvements to roads and drains at Mariyannapalya Left Side in Ward No. 06, Dasarahalli Village Limits, BBMP, Bangalore.
Reference	EE/BTP/BBMP/KRIDL/WO/ /2013-14
Source / Location	WMM Plant
Type of Mix	Wet Mix Macadam
Date of Testing	19.05.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	382	386	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	85	88	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	298	297	298	
4	Aggregate Impact value = percent fines	21.58	22.25	22.80	
	100* (W_2/W_1)%				22.21

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Reference	EE/BTP/BBMP/KRIDL/WO/ /2013-14
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	19.05.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	384	385	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	81	83	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	303	302	302	
4	Aggregate Impact value = percent fines	21.09	21.56	21.96	
	100* (W_2/W_1)%				21.54

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Client	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
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Reference	EE/BTP/BBMP/KRIDL/WO/ /2013-14
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	19.05.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	381	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	87	89	91	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	298	292	296	
4	Aggregate Impact value = percent fines	22.60	23.36	23.51	
	100* (W_2/W_1)%				23.16

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/WNo.06/KRIDL/WMM/Shape.T/2014-15 : 20.05.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager (West),** KRIDL, BBMP, Bangalore.
Name of Work	: Improvements to roads and drains at Mariyannapalya Left Side in Ward No. 06, Dasarahalli Village Limits, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/KRIDL/WO/ /2013-14
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Wet Mix Macadam
Date of Testing	: 20.05.2014

Result : Flakiness Index = **13.56%**

Elongation Index = **11.51%**

Result : Combined Flakiness & Elongation index **25.07%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Wet mix Macadam is 30%

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Client	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
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Reference	: EE/BTP/BBMP/KRIDL/WO/ /2013-14
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Wet Mix Macadam
Date of Testing	: 20.05.2014

Result : Flakiness Index = **13.68%**

Elongation Index = **11.35%**

Result : Combined Flakiness & Elongation index **25.03%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Wet mix Macadam is 30%

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#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.
Tele Fax : 23223227, Website : www.civiltechconsultants.com
E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/WNo.06/KRIDL/WMM/Shape.T/2014-15 : 20.05.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager (West),** KRIDL, BBMP, Bangalore.
Name of Work	: Improvements to roads and drains at Mariyannapalya Left Side in Ward No. 06, Dasarahalli Village Limits, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/KRIDL/WO/ /2013-14
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Wet Mix Macadam
Date of Testing	: 20.05.2014

Result : Flakiness Index = **13.26%**

Elongation Index = **11.54%**

Result : Combined Flakiness & Elongation index 24.80%

Comments:

→ Maximum allowable Flakiness & Elongation Index for Wet mix Macadam is 30%

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿಬಿಎಂಪಿ. ಬೆಂಗಳೂರು-24

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Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/WNo.06/KRIDL/WMM/Shape.T/2014-15 : 20.05.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager (West),** KRIDL, BBMP, Bangalore.
Name of Work	: Improvements to roads and drains at Mariyannapalya Left Side in Ward No. 06, Dasarahalli Village Limits, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/KRIDL/WO/ /2013-14
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Wet Mix Macadam
Date of Testing	: 20.05.2014

Result : Flakiness Index = **13.94%**

Elongation Index = **11.43%**

Result : Combined Flakiness & Elongation index **25.37%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Wet mix Macadam is 30%

Note:

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3. Any Query regarding the report must be reported within 15 days from the date of testing.

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Job No.: CTCE/BBMP/WNo.06/KRIDL/WMM/AL/2014-15 21.05.2014

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, BBMP, Bangalore.

Name of Work : Improvements to roads and drains at Mariyannapalya Left Side in Ward No. 06, Dasarahalli Village Limits, BBMP, Bangalore.

Reference : EE/BTP/BBMP/KRIDL/WO/ /2013-14

Date of Testing : 21.05.2014

Material : WMM

Sample Location : WMM Mix Plant

As per MORTH Table 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	23.10	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, BBMP, Bangalore.

Name of Work : Improvements to roads and drains at Mariyannapalya Left Side in Ward No. 06, Dasarahalli Village Limits, BBMP, Bangalore.

Reference : EE/BTP/BBMP/KRIDL/WO/ /2013-14

Date of Testing : 21.05.2014

Material : WMM

Sample Location : WMM Mix Plant

As per MORTH Table 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	20.85	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, BBMP, Bangalore.

Name of Work : Improvements to roads and drains at Mariyannapalya Left Side in Ward No. 06, Dasarahalli Village Limits, BBMP, Bangalore.

Reference : EE/BTP/BBMP/KRIDL/WO/ /2013-14

Date of Testing : 21.05.2014

Material : WMM

Sample Location : WMM Mix Plant

As per MORTH Table 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	21.45	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, BBMP, Bangalore.

Name of Work : Improvements to roads and drains at Mariyannapalya Left Side in Ward No. 06, Dasarahalli Village Limits, BBMP, Bangalore.

Reference : EE/BTP/BBMP/KRIDL/WO/ /2013-14

Date of Testing : 21.05.2014

Material : WMM

Sample Location : WMM Mix Plant

As per MORTH Table 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	22.35	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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